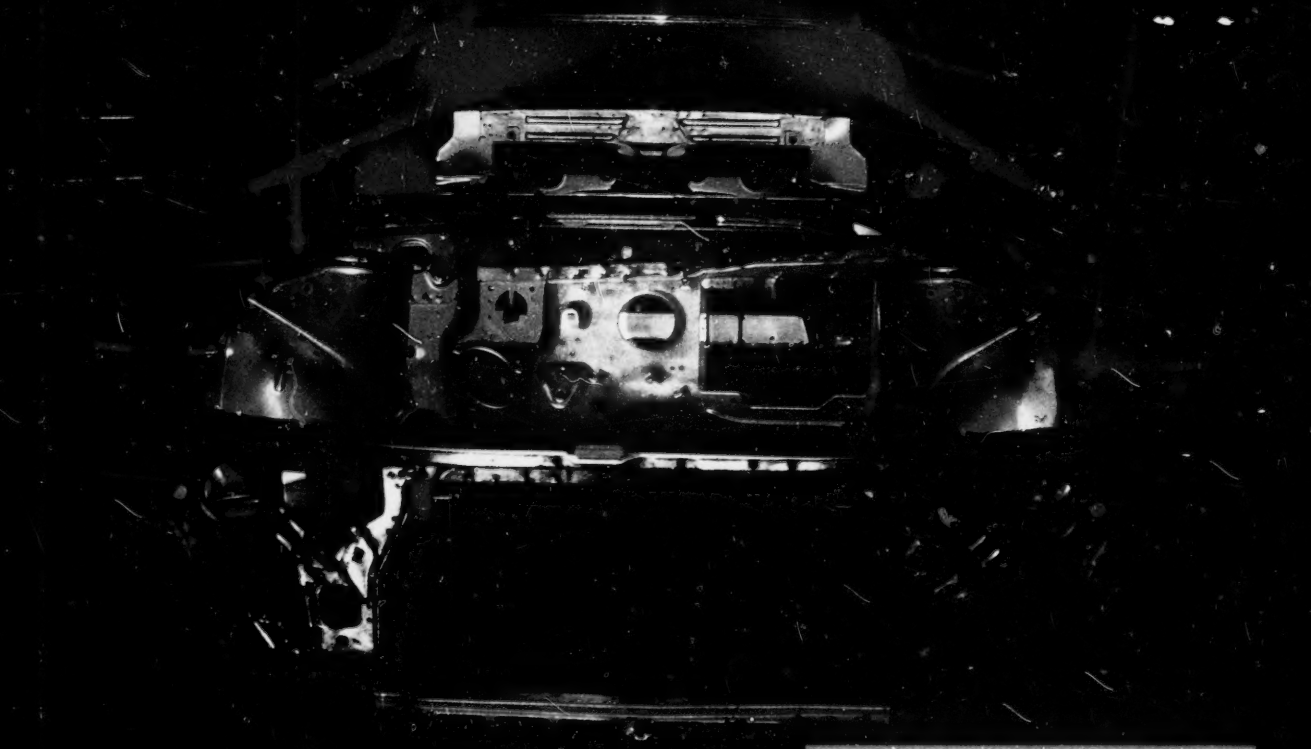
MANUFACTURING MANAGEMENT

STATE-OF-THE-ART AUTOMAKING: GM'S DETROIT/HAMTRAMCK PLANT



AMERICA'S NEW SUPERPLANTS

How Does Your Plant Rate In Equipment Productivity?

The Standard That Simplifies NC Machining

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FEBRUARY 21, 1986 VOL. 229, NO.4

IRON AGE
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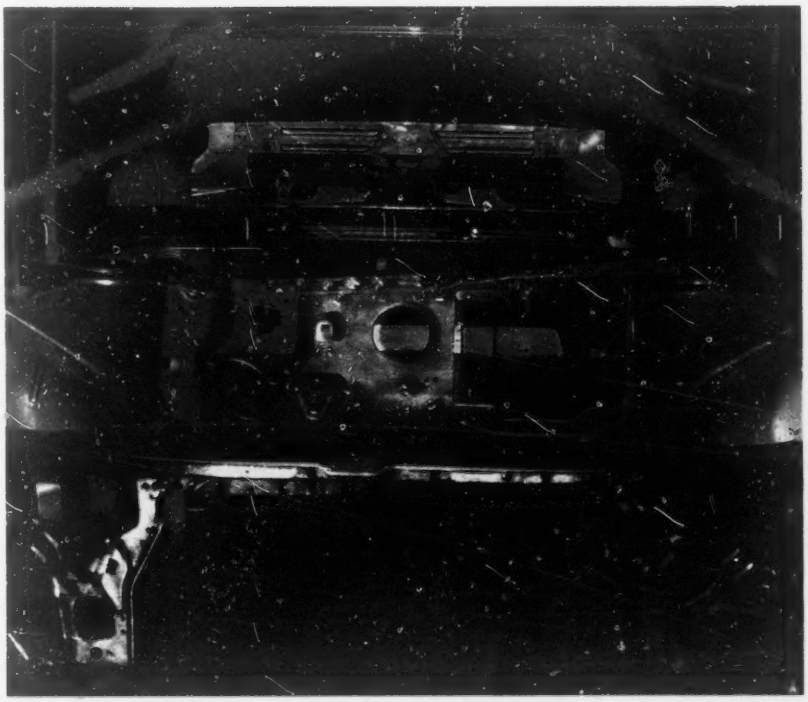

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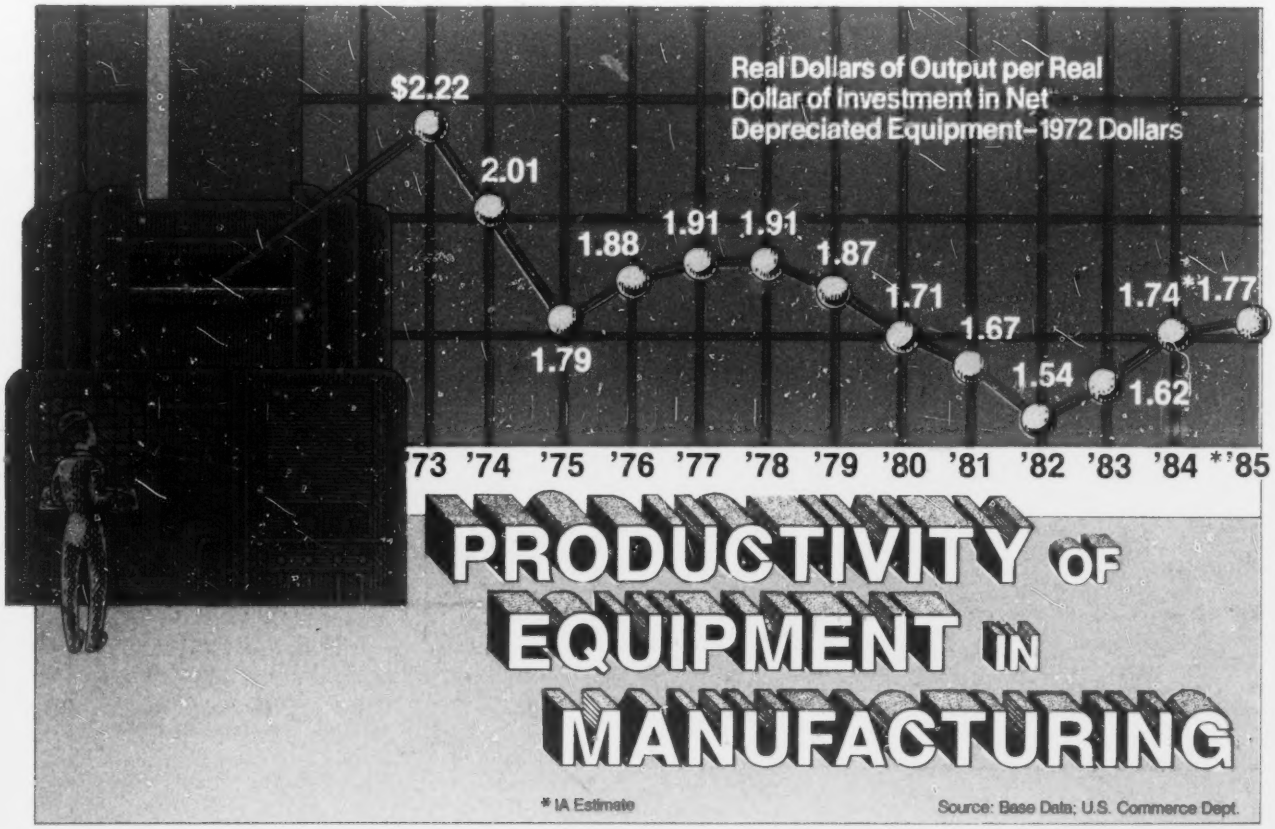


HOW DOES YOUR PLANT RATE IN EQUIPMENT PRODUCTIVITY?

Put another way—how many dollars of output are you getting for each dollar of equipment? That's a key challenge as manufacturing becomes more and more capital intensive.

BY JOHN D. BAXTER

The recent and continuing drive by U.S. manufacturing companies to become leaner, meaner and tougher may face its greatest challenge this year.

For one, much of the restructuring, retrenchment and corporate tightening up that can be done, has been done. Gains from now on will be hard-bitten ones.

Too, 1986 does not promise to be a year of strong economic growth and it follows a year when the economy slowed sharply from the previous year. Lagging economic growth leads to slowed production lines. And that makes it tougher to hold down unit production costs.

And, drawing the circle tighter, there is the real prospect that plant spending will decline. The latest U.S. Commerce Department survey of business executives points to a 1 pct dip in real terms. Further, capital appropriations by the 1,000 largest U.S. manufacturers were recently cut back by 11 pct, according to the Conference Board.

The capital goods market is a key one for basic goods industries, where some of the most urgent restructuring is taking place. When plant spending lags, production lines of suppliers of capital goods also lag. Long-term corporate strengthening moves will suffer as managers deal with their pressing short-term problems.

To top it off, imports are expected to roll in at tidal force and force domestic production lines to operate at less-than-optimum levels.

Even if the dollar exchange value falls steadily, trade analysts warn, importers will cut their prices to hold on to market shares here.

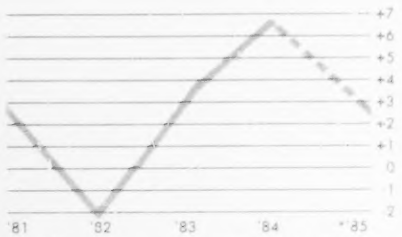
The Squeeze is On

So, the challenges to U.S. manufacturers continue. The main-line effort of manufacturing managers will be to get the most out of the assets

EQUIPMENT PRODUCTIVITY

The 1983-84 surge in the U.S. economy . . .

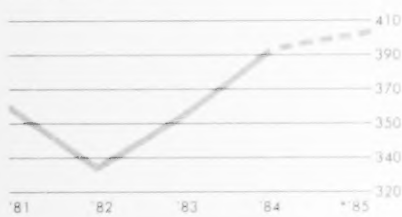
GNP—Pct Annual Changes in 1972 Dollars



*I.A. Estimate Source: U.S. Commerce Dept.

. . . gave such a sharp boost to factory output . . .

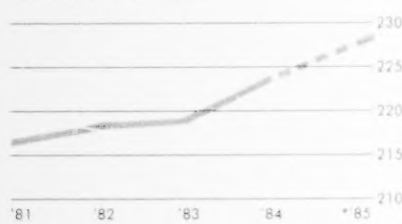
GDP—Manufacturing, Billions of 1972 Dollars



*I.A. Estimate Source: U.S. Commerce Dept.

. . . that,even with more equipment on line . . .

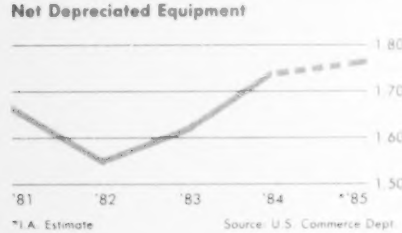
Net Stock, Capital Equipment in Mfg. Billions of 1972 Dollars



*I.A. Estimate Source: U.S. Commerce Dept.

. . . productivity of plant equipment rose sharply.

Equipment Productivity,Mfg.—Real Dollars of Output per Real Dollar of Investment in Net Depreciated Equipment



*I.A. Estimate Source: U.S. Commerce Dept.

they now have on their plant floors—or any new assets they acquire. Importantly, that means getting the most out of their production equipment.

Some progress has been made in the past two years on improving productivity of manufacturing equipment. Still, say many management consultants and others, much more attention to this subject is needed by manufacturing managers.

The corporate hunt for the people to carry on this drive for greater equipment productivity has intensified. Recently, a spokesman for the executive recruitment firm, Korn Ferry International said, "The focus now is on greater efficiency, on finding operational experts and engineers. Companies are interested in people who can squeeze efficiencies out of operations."

It seems clear then that one of the hottest subjects in manufacturing this year will center on productivity of plant equipment. Simply, this refers to the return on investment on capital stock in use. It is a measure of return on capital—in this case, the return on capital stock.

The guru of U.S. management consulting, Peter F. Drucker, said, "Despite its importance and payoff, not many business managers pay much attention to the productivity of capital, let alone work systematically at raising it."

Consultant Drucker, and others, report that many companies have more refined measures of labor productivity than they do for equipment. Yet, manufacturing companies are becoming more capital-intensive all the time. It is true that capital/output ratio analysis is used fairly widely, but this measure has a broader base than just production equipment.

What the Record Shows

So, how has equipment productivity in manufacturing fared in the most recent critical period? What forces have been shaping it?

Some years ago, *Iron Age*, after consultation with productivity experts, developed a measure of manufacturing equipment productivity. This article updates the trend that *Iron Age* has monitored in a number of past articles. (For an explanation of methodology, see box: How Productivity is Figured.)

In brief, the productivity measure used shows the dollar value added by manufacturers in making their products for each dollar's worth of equipment used. The dollar figures used are real ones, that is, stripped of inflation distortion. Too, the equipment is net of depreciation.

On the basis of the *Iron Age* measurement, the trend in productivity of equipment used in U.S. manufacturing industries for 1973 through that estimated for last year, is shown in the chart here (see p. 33).

The year 1973 is used as a starting year because it was an apparent watershed year in the U.S. economy; it marked the start of a new long-term era.

The point that jumps out on the chart, of course, aside from the long-term slide, is the upturn in productivity for the years 1983 through 1985.

The Forces at Work

What made equipment productivity go up in those years? A look at the input and output elements of this productivity ratio gives the explanation.

The years 1983-85 marked a period of relatively strong U.S. economic growth. This prosperity gave a lift to manufacturing output (the output element in the productivity ratio). At the same time, the coming on line of new equipment (the input element) lagged. Thus, output moved up more sharply than input, so productivity rose.

The lag in equipment expansion in the covered period was due largely to the fact that output of manufacturers, their Gross Domestic Output (GDP), had suffered through five "down" years for the economy over the preceding six-year period of 1977-82.

It took some time until 1983 for manufacturers to again start putting new equipment on line in any good size numbers. Meanwhile, much equipment had been depreciated, or

pulled out of production as part of industry restructuring.

More than any other force, it is the rise and fall of the overall economy that shapes the trend line of manufacturing equipment productivity. When business is good, manufacturers' GDP, or value-added output, rises.

Conversely, when business is slow, this output sinks. The input factor, equipment, moves along a more steady bearing. In one sense, it can be said that as the economy goes, so goes the productivity of manufacturers' equipment. It is the output factor that tends to snap the whip on productivity performance.

Overall, the productivity chart here makes it clear why 1973 was chosen as a starting year. The long-term downswing in productivity is explained by the fact that the average annual growth rate (per real GNP) for the U.S. economy in the 13-year 1973-85 period came to 2.5 pct. That rate lagged the postwar U.S. rate of 3.5 pct. More markedly, the 1973-85 economic growth rate was down sharply from the 3.9 pct growth rate for the 13-year period preceding 1973.

The difference in growth thrust in the compared 13-year periods was actually sharper than indicated by the growth percentages. There were four years of negative growth between 1973 and 1985, as compared to one year of negative growth in the previous 13-year span. That kind of economic whiplash curtails capital investment.

At the Factory Level

Equipment productivity at the factory level moves up and down in much the same way as it does at the overall manufacturing level. In factory-level terms, when production volume is rolling strongly through a plant, and operating rates are near preferred, or optimum, rates, equipment productivity runs high. But when orders are off and output levels sink, a plant's equipment productivity takes a dive.

In other words, as far as impact on equipment productivity goes, there is little difference between mechanical downtime at the plant level or economic downtime at the overall manufacturing level. All downtimes, at whatever level they hit, take a terrible toll on productivity.

Still, equipment productivity at individual companies will not always run hand-in-glove with rises and falls in the economy. Their markets may not move closely with the overall business cycles. But their equipment productivity will vary according to the state of activity in their markets. One way or another, strong product demand helps boost productivity, and weak demand pushes it down.

The "output" element is shown to be the big shaper of equipment productivity. Still, the "input" element—equipment—can also greatly affect productivity. It is known that an infusion of new equipment on production lines can lead to lower product prices or goods of improved quality, which, in turn, can lead to increased sales and output volumes.

An increasing number of companies have done all the retrenchment and fat-trimming they feel they can do, according to leading industry consultants. Some of these companies are starting to invest in the latest manufacturing technologies. "It might be called a Phase Two movement towards becoming low-cost producers or world-class competitors," said one consultant. "Phase Two is a drive for even lower unit costs and improved product quality through productivity gains; it chiefly involves investment in computer-related production equipment."

How Productivity is Figured

Any productivity figure is a ratio based on an input factor and an output factor. In determining productivity of manufacturing equipment, a variety of input and output factors can be used. Resulting productivity measures will differ according to the input/output factors employed.

The approach used in this article to measure productivity of manufacturing capital equipment is one developed by *Iron Age* after discussion with a number of experts. All the base data used comes from the U.S. Commerce Department.

Here is how *Iron Age* arrives at its productivity figures:

Input is the investment in net constant dollars (1972) in equipment in use by U.S. manufacturing industries. The "net" means the dollar value of investment after an allowance has been made for depreciation of such equipment. The "constant dollar" reference means, of course, the dollar value after allowing for inflation.

Output, in the productivity ratio, is gross domestic value of output of U.S. manufacturers. That means that output is the dollar value added by manufacturers on goods produced by them in this country—in terms of inflation-adjusted dollar volume.

Productivity, then, is the dollar value added by manufacturers for each dollar's worth of equipment used—all dollars inflation-adjusted and equipment value net of depreciation.

For example, U.S. manufacturers in 1982 had an estimated gross domestic output (value added) of $337 billion. They achieved that output by using capital machinery and equipment valued at $218 billion. That meant that each dollar's worth of equipment in use produced $1.54 worth of output.

Now, look at the chart on equipment productivity. Compare the $1.54 figure for 1982 with the $1.77 figure for 1985. That comparison shows that productivity of equipment used in U.S. manufacturing was up 15 pct in 1985 over 1982. Still, as reflected in the chart, productivity in 1985 was down some 20 pct from the recent-years high of $2.22 in 1973. The reasons for these differences, and other changes in the levels of equipment productivity, are discussed in the article.

While the importance of productive equipment is clear enough, a number of plant productivity experts contend that it is still given little attention by a great many manufacturing managers. This point was brought out in an in-depth study made by a management consultant at five manufacturing plants in New England.

The study found the equipment utilization rates running at an average 35 pct of capacity. These low rates were not due to slack market demand or too few work orders flowing through the plants. The low-productivity findings, noted the analysts, were "about in line" with what they had found during more casual visits to dozens of manufacturing plants over the years.

Notably, in all companies, labor utilization rates ran higher than equipment utilization rates. This, despite the fact, as noted here, that manufacturing is becoming more capital intensive all the time.

"Direct labor," said Stephen Moss at another consulting firm, Arthur D. Little, Inc., "may no longer be the area of opportunity for greater productivity for U.S. companies."

The slighting of equipment productivity by many plant managers is confirmed by Peter Drucker. He says that in the hundreds of manufacturing companies he has looked into, many used elaborate feasibility study programs when acquiring capital equipment, but "very few had follow-up programs to keep track of the actual performance of the equipment once in operation."

A Veil is Lifted

Recently, the Commerce Department commissioned a study to find out more about the international competitiveness of U.S. manufacturers. This study, made by Philadelphia's Technology Management Center (TMC), gives valuable insights on what is needed in terms of acquisition and use of modern equipment to make it most productive.

The TMC study, an in-depth one that included a survey of 90 manufacturers, covered on-site looks at 42 of them. One key finding pointed to a high payoff for those companies that have properly acquired and used the latest in manufacturing technology, including equipment.

"Technologies such as numerical control equipment, computer-aided design, robotics and computer-related techniques were proven to increase productivity, reduce costs and improve product quality," the analysts noted.

Backing up their own findings, the researchers found that industry experts claim that technology can account for as much as a 60 pct plant productivity increase.

Mr. Drucker is one such expert making that claim. He stated that automation, when installed in a manufacturing plant, has paid for itself within three years, "and often much faster."

Still, a major finding of the TMC study was that U.S. manufacturers were showing "a widespread unwillingness" to use the modern manufacturing equipment and techniques.

"Throughout the project," it was noted in the report, "the most common excuse used by companies for not using advanced manufacturing technologies was that they were too expensive. Further research, however, indicated that manufacturers were not using them more extensively because they did not understand their advantages and benefits and were generally fearful of computer-based manufacturing techniques."

So, right at step No.1 in boosting equipment productivity—getting and using the best equipment—there is an apparent block among many manufacturers.

Right Setting Needed

In addition, the TMC study found that even with new equipment on line, many companies failed to boost productivity.

Two reasons were cited: First, some companies failed to consider overall corporate manufacturing strategy when they acquired their equipment.

Secondly, many companies sought to install equipment in plants that had not been brought up to full speed in terms of efficiency; the best of equipment cannot be productive in an inefficient plant setting.

"Inefficient use of new technologies," stated the study, "has usually resulted because, for the most part, they have been acquired without regard to their role in an overall manufacturing strategy. Unlike marketing or financial plans which most companies generate anually, less than 10 pct of the firms surveyed had developed a plan for the acquisition or use of computers or technology in their companies.

"This lack of planning has created 'islands of automation,' sophisticated islands of technology acquired at random, scattered on shop floors with little regard to their role in producing a better product. This has ... in many instances ... created problems which have had a negative impact on productivity."

Even with good corporate planning prior to purchase of new equipment, there is another often-seen block to gains in equipment productivity.

In essence, noted the report, the new technologies are only a tool, a computer-aided way to do the things always recognized as necessary to run an efficient factory. If management is not running an effective factory, no amount of computer automation is going to help.

"If the industrial engineering is sloppy, if the standards are loose, if the layout is poor, if the production planning and control systems are not up to the standards of today's best practices, if the product designs are inefficient—then simply computerizing the manufacturing process is unlikely to help substantially."

In sum, what the experts seem to be saying is that manufacturing companies cannot do much in a direct sense, about business cycles that lead to reduced shop work volume and crimp productivity of their equipment. But there are steps manufacturers can take to cushion the impact of down-cycles on their companies. Steps to boost productivity of equipment play a key role. □

PRICE & PRODUCTION DATA

(Effective January 27, 1986)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	189	185	157	154
Pittsburgh	199	202	149	169
Youngstown	108	95	81	96
Lake Erie	127	131	102	120
Detroit	143	179	129	122
Chicago	433	501	354	392
Cincinnati	98	95	66	83
St. Louis	75	77	65	76
Southern	224	228	156	163
Western	87	86	67	63
U.S. Production	1,764	1,779	1,341	1,459

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Eveleth, Gilbert, Mountain Iron, Virginia, Nashwauk, Keewatin, Taconite Harbor, or Silver Bay

Pellets, per ton, unit natural: gross ton, $68.50

Pellets, per ton, unit natural: gross ton, $69.45*

Pellets, per ton, unit natural: gross ton, $72.50-$69.95**

Mesabi, regular, unscreened: gross ton, $32.55

Mesabi, non-bessemer: gross ton, $30.05-31.63

*1986 Market pellet premium. **Premium for low phosphorus pellets, 0.03% maximum. ***Premium for low silica pellets, 4.5% maximum. Source: Lake Superior Iron Ore Association

STEEL PRODUCTION, COMPOSITE PRICES

(Effective January 27, 1986)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1986	To Date 1985
Net tons, in thousands	1,764	1,779	6,135	5,324
Capability Utilization Rate	70.7	71.3	68.8	57.6

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (e. to—eff. 1-1-86)	24.607	24.607	27.582	27.582
Pig Iron** (Net tons 2000 lb.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy *** (Gross tons 2240 lb.)	$ 73.50	$ 73.50	$ 72.17	$ 81.50
No. 2 bundles	$ 52.83	$ 52.83	$ 51.17	$ 53.50

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh	$ 73.50	$ 73.50	$ 72.50	$ 83.50
No. 1 steel, Philadelphia	72.50	72.50	71.50	80.50
No. 1 steel, Chicago	74.50	74.50	72.50	80.50
No. 1 bundles, Detroit	70.50	70.50	67.50	75.50
Low Phos., Youngstown	73.50	73.50	71.50	72.50
No. 1 heavy cast, Pgh.	88.50	88.50	88.50	96.50
No. 1 heavy cast, Phila.	92.50	92.50	91.50	98.50
No. 1 heavy cast, Chi.	104.50	104.50	104.50	111.50

NONFERROUS PRICES

(Effective January 27, 1986)

Primary Metal Prices

Aluminum, 99.5%, del'd	50.33	52.41	57.64
LME			
Copper (C)	66.50	66.50	
	71.00	71.00	71.00
Lead	15.00	15.00	
	19.00	19.00	21.00
Magnesium, ingot*	153.00	148.00	148.00
Nickel (ME)	174.21	183.44	207.84
Zinc	35.00	35.00	39.00

Aluminum, ingot, 99.5% min. purity, 30-ton lots, del'd Midwest. Copper, electrolytic, cathode, del'd Conn. Valley. Lead, del'd, 99.9% min. purity. Magnesium, ingot, 99.8% min. purity, 30-ton lots, del'd Midwest. Nickel, ingot, 99.95% min. purity, del'd. Zinc, prime western, del'd. *Primary. LME: London Metal Exchange

Antimony, American (Laredo, Texas)	$1.00
Beryllium-aluminum 5% Be, per lb. contained Be	$236.00
Beryllium-copper, per lb. cont. Be	$144.00
Beryllium 97% powder 200	$197.00
Cadmium, ton lots	$1.25-1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$11.70
Gold per troy oz.	$158.40
Indium, dollars per troy oz.	$2.50
Iridium, dollars per troy oz.	$430.00
Magnesium sticks, 10,000 lbs.	$2.02
Mercury, per 76-lb. flask, N.Y.	$290.00-310.00
Molybdenum, lb. 'tech. moly oxides, 20 lb. MO can	$3.00-3.13
Palladium, per troy oz.	$104.00

Straits Tin Price

Scrap Prices
Brass Mill Scrap

	Solids	Turnings

Custom Smelters Scrap

Ingot Makers Scrap

Dealers' Scrap

Aluminum

Copper and Brass

Lead

Nickel

Zinc

EFFECTIVE JANUARY 27, 1986

Ferrous Scrap Prices

Pittsburgh

Chicago

Philadelphia

Detroit

Youngstown

Cleveland

Buffalo

St. Louis

Birmingham

Cincinnati

No. 1 hvy. melting	$ 54.00 to $ 55.00
No. 2 hvy. melting	53.00 to 54.00
No. 1 dealer bundles	74.00 to 75.00
No. 2 bundles	34.00 to 35.00
Machine shop turnings	9.00 to 10.00
Mixed turnings	12.00 to 13.00
Cast iron borings	19.00 to 20.00
Low phos. 18 in. and under	81.00 to 82.00
Rails, random lengths	64.00 to 65.00
Rails, 2 ft and under	79.00 to 80.00
No. 1 railroad cast	66.00 to 67.00
Heavy breakable cast	27.00 to 28.00
Stove plate, cast	72.00 to 73.00

New York

No. 1 hvy. melting	$ 44.00 to $ 45.00
No. 2 hvy. melting	35.00 to 36.00
No. 2 dealer bundles	20.00 to 24.00
Mixed borings and turnings	10.00 to 11.00
Machine shop turnings	4.00 to 6.00
Shoveling turnings	10.00 to 12.00
Clean cast chem. borings	35.00 to 36.00
No. 1 machinery cast	79.00 to 80.00
Mixed yard cast	59.00 to 61.00
Heavy breakable cast	10.00 to 12.00
Stainless	
18-8 prepared solids	445.00 to 465.00
18-8 turnings	340.00 to 365.00
430 prepared solids	90.00 to 100.00
410 solids	75.00 to 85.00

Boston

No. 1 hvy. melting	$ 51.00 to $ 53.00
No. 2 hvy. melting	41.00 to 43.00
No. 1 dealer bundles	53.00 to 55.00
No. 2 bundles	34.00 to 36.00
No. 1 busheling	59.00 to 61.00
Shredded scrap	61.00 to 65.00
Machine shop turnings	12.00 to 14.00
Shoveling turnings	18.00 to 20.00
No. 1 machinery cast	75.00 to 80.00
Mixed yard cast	46.00 to 48.00
Heavy breakable cast	8.00 to 10.00

San Francisco

No. 1 hvy. melting	$ 41.00 to $ 43.00
No. 2 hvy. melting	35.00 to 37.00
No. 1 dealer bundles	32.00 to 34.00
No. 2 dealer bundles	20.00 to 22.00
Machine shop turnings	6.00 to 9.00
Cast iron borings	6.00 to 9.00
No. 1 cupola cast	80.00 to 82.00

Los Angeles

No. 1 hvy. melting	$ 38.00 to $ 40.00
No. 2 hvy. melting	30.00 to 34.00
No. 1 dealer bundles	29.00 to 31.00
No. 2 dealer bundles	16.00 to 18.00
Machine shop turnings	11.00 to 12.00
Shoveling turnings	10.00 to 11.00
Cast iron borings	8.00 to 9.00
Rails, random 1 ft and longer	
Rails, 2 ft and under	72.00 to 72.00
No. 1 cupola cast	72.00 to 74.00

Seattle

No. 1 hvy. melting	60.00 to 62.00
No. 2 hvy. melting	51.00 to 53.00
No. 2 bundles	36.00 to 37.00
No. 1 busheling	84.00 to 90.00
Mixed yard cast	80.00 to 82.00

Hamilton, Ont.

No. 1 hvy. melting	$ 61.00
No. 2 hvy. melting cut 2 ft and under	72.00
No. 1 dealer bundles	55.00
No. 2 bundles	41.00
Mixed steel scrap	59.00
Bush. new cast, 2 ft and under	81.00
Bush. new cast, cupola cut	84.00
Machine shop turnings	34.00
Short steel turnings	34.00
Mixed borings and turnings	19.00
Cast borings	89.00

Houston

No. 1 hvy. melting	$ 72.00 to $ 73.00
No. 2 hvy. melting	57.00 to 58.00
No. 2 bundles	42.00 to 43.00
Machine shop turnings	11.00 to 12.00
Cupola turnings	30.00 to 31.00
Shredded scrap	79.00 to 80.00
Cut structural plate, 2 ft and under	101.00 to 102.00
Cut structural plate, 3 ft and under	83.00 to 84.00
Unprepared motor blocks	57.00 to 58.00
Cupola cast	55.00 to 56.00

PRICES CONTINUE TO WALK A TREADMILL

A few short years ago (1979-80), some economists worried that the country would have to learn to live with high inflation rates. Inflation, they said, would be the great economic nemesis of the 1980s, 1990s and perhaps beyond.

Well, three full years have passed with little inflation. In the period 1983-85, for example, producer prices have gone up by 0.6 pct, 1.7 pct, and last year by 1.8 pct. That's the lowest price gain for any three-year period since the mid-1960s.

And, it didn't take a recession to force the price wring-out. Over that three-year span, the U.S. economy grew by a strapping 13 pct.

In short...Yes, Virginia, there can be growth without inflation.

Last year closed on a continuing note of low price numbers. A good example is seen in the table here. In December, prices for five of the product lines fell from the previous month. Also, nine of the product lines showed no month-to-month price changes. And, prices in four product lines moved up by only 0.1 pct. In sum, 18 of 22 product groups showed little or no upward price pressures in December.

There seems to be little on the horizon to threaten this near inflation-free economic environment, at least nothing through much of 1986.

Some economists are sounding a warning bell, though. They note that money supply growth was 12 pct over the past year. If that steamy growth pace continues, they say, it will in time bring on inflation.

Too, they warn, if the Fed reins in on money supply growth, even a little, it will bring on inflation. The reason: The record debt load—of the government, consumers and corporations—would create a demand for rollover funding that could not be met. That also would set inflation in motion.

Latest Month Covered: December 1985

Products	Index Reading For Month (1967 = 100)	Pct Change From Previous Month	Pct Change From Year-Ago Month
Metal Cutting Machine Tools	395.1	— 0.2	+ 0.2
Metal Forming Machine Tools	437.2	+ 0.9	+ 1.9
Agricultural Machinery & Equip.	337.9	0	+ 0.1
Construction Machinery & Equip.	363.6	0	+ 1.6
Industrial Process Furnace & Ovens	391.8	— 0.1	+ 3.1
Industrial Material Handling Equip.	296.0	+ 0.5	+ 1.3
Pumps, Compressors & Allied Equip.	359.5	0	+ 2.1
Fluid Power Equip. (Dec. 1970 = 100)	265.6	+ 0.1	+ 1.4
Mechanical Power Transmission Equip.	339.0	0	+ 2.5
Automobiles	232.5	— 0.9	+ 3.5
Motor Trucks—Light	312.6	0	+ 8.0
Motor Trucks—Heavy	335.2	0	+ 8.5
Railroad Equipment	364.4	+ 0.1	+ 1.5
Fabricated Metal Structural Products	315.4	0	+ 0.7
Electric Motors	351.0	0	+ 2.6
Valves & Fittings (Dec. 1982 = 100)	105.3	+ 0.2	+ 2.4
Ball & Roller Bearings	353.2	— 0.3	+ 2.2
Cutting Tools & Accessories	287.4	+ 0.1	+ 1.4
Heating Equipment	262.2	+ 0.3	+ 2.3
Plumbing Fixtures & Brass Fittings	314.7	— 0.1	+ 1.7
Metal Containers	361.4	+ 0.9	+ 1.2
Miscellaneous Metal Products	302.4	0	+ 0.2

Data based on U.S. Labor Dept.'s Producer Price Index